

SEQUENCE LISTING

<110> Vadim R. Viviani
Yoshihiro Ohmiya

<120> Nucleic Acid Molecules Encoding Red and
Green Emitting Luciferases

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<141> 2000-03-01

<150> 09/388,290

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<151> 1998-09-02

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Tyr	Gln	Ser	Leu	Tyr	Lys	Phe	Ala	Ser	Phe	Pro	Glu	Ala	Ile	Ile	Asp	
			30					35						40		

gct	cat	aca	aat	gaa	gta	ata	tca	tat	gct	caa	ata	ttt	gaa	acc	agc	196
Ala	His	Thr	Asn	Glu	Val	Ile	Ser	Tyr	Ala	Gln	Ile	Phe	Glu	Thr	Ser	
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Cys	Arg	Leu	Ala	Val	Ser	Ile	Glu	Gln	Tyr	Gly	Leu	Asn	Glu	Asn	Asn	
		60					65				70					

gtt	gtg	ggg	gta	tgc	agt	gaa	aac	aat	ata	aac	ttt	ttt	aat	cct	gtc	292
Val	Val	Gly	Val	Cys	Ser	Glu	Asn	Asn	Ile	Asn	Phe	Phe	Asn	Pro	Val	
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tac Tyr	aca Thr	gat Asp	gga Gly	gag Glu 110	tta Leu	act Thr	ggt Gly	cat His	ttg Leu 115	aat Asn	ata Ile	tca Ser	aaa Lys	cca Pro 120	act Thr	388
atc Ile	atg Met	ttt Phe	agt Ser 125	tca Ser	aag Lys	aaa Lys	gca Ala	ctc Leu 130	ccg Pro	ctt Leu	att Ile	ctg Leu	aga Arg 135	gta Val	cag Gln	436
caa Gln	aat Asn	cta Leu 140	agt Ser	ttc Phe	att Ile	aaa Lys	aaa Lys 145	gtc Val	gta Val	gtt Val	atc Ile	gat Asp 150	agc Ser	atg Met	tac Tyr	484
gac Asp	att Ile 155	aat Asn	ggc Gly	gtt Val	gaa Glu	tgc Cys 160	gta Val	tct Ser	acc Thr	ttt Phe	gtt Val 165	gca Ala	cgt Arg	tat Tyr	act Thr	532
gac Asp 170	cac His	acc Thr	ttt Phe	gat Asp	cca Pro 175	ttg Leu	tca Ser	ttt Phe	aca Thr	cca Pro 180	aaa Lys	gat Asp	ttt Phe	gat Asp	ccc Pro 185	580
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cct Pro	aag Lys	ggt Gly	gta Val 205	gta Val	ctg Leu	agc Ser	cat His	aga Arg 210	agt Ser	cta Leu	act Thr	ata Ile	aga Arg 215	ttc Phe	gtt Val	676
cat His	agc Ser	agg Arg 220	gat Asp	ccc Pro	att Ile	tat Tyr	ggc Gly 225	act Thr	cgt Arg	acg Thr	gtt Val 230	cca Pro	caa Gln	aca Thr	tca Ser	724
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gct Ala	cct Pro 315	tta Leu	gga Gly	aaa Lys	gat Asp	gtc Val 320	gca Ala	gaa Glu	gca Ala	gta Val	gca Ala 325	aag Lys	agg Arg	ttg Leu	aaa Lys	1012

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Ile	Pro	Val	Ala	Thr	Ser	Asn	Asp	Met	Tyr	Thr	Asp	Gly	Glu	Leu	Thr
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Ser	Phe	Thr	Pro	Lys	Asp	Phe	Asp	Pro	Leu	Glu	Lys	Ile	Ala	Leu	Ile
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Met	Ser	Ser	Ser	Gly	Thr	Thr	Gly	Leu	Pro	Lys	Gly	Val	Val	Leu	Ser
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His	His	Ala	Phe	Gly	Met	Phe	Thr	Thr	Leu	Ser	Tyr	Phe	Val	Val	Gly
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Leu	Lys	Val	Val	Met	Leu	Lys	Lys	Phe	Glu	Gly	Ala	Leu	Phe	Leu	Lys
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Thr	Ile	Gln	Asn	Tyr	Lys	Ile	Pro	Thr	Ile	Val	Val	Ala	Pro	Pro	Val
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Ser Lys Pro Cys Leu Met Phe Cys Ser Lys Lys Ser Leu Pro Phe Ile	
120 125 130	
ctg aaa gta caa aaa cat cta gat ttc ctt aaa aga gtc ata gtc att	487
Leu Lys Val Gln Lys His Leu Asp Phe Leu Lys Arg Val Ile Val Ile	
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Asp Ser Met Tyr Asp Ile Asn Gly Val Glu Cys Val Phe Ser Phe Asp	
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Ser Arg Asn Thr Asp His Ala Phe Asp Pro Val Lys Phe Asn Pro Lys	
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Glu Phe Asp Pro Leu Glu Arg Thr Ala Leu Ile Met Thr Ser Ser Gly	
185 190 195	
aca act gga ttg cct aaa ggg gta gta ata agc cat aga agt ata act	679
Thr Thr Gly Leu Pro Lys Gly Val Val Ile Ser His Arg Ser Ile Thr	
200 205 210	
ata aga ttc gtc cat agc agt gat ccc atc tat ggt act cgt att gct	727
Ile Arg Phe Val His Ser Ser Asp Pro Ile Tyr Gly Thr Arg Ile Ala	
215 220 225	
cca gat aca tca att ctt gct ata gca ccg ttc cat cat gcc ttt gga	775
Pro Asp Thr Ser Ile Leu Ala Ile Ala Pro Phe His His Ala Phe Gly	
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Val Lys Lys Phe Glu Gly Glu Phe Phe Leu Lys Thr Ile Gln Asn Tyr	
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aaa atc gct tct att gta gtt cct cct cca att atg gta tat ttg gct	919
Lys Ile Ala Ser Ile Val Val Pro Pro Pro Ile Met Val Tyr Leu Ala	
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Lys Ser Pro Leu Val Asp Glu Tyr Asn Cys Ser Ser Leu Thr Glu Ile	
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Thr Cys Ser Ala Leu Ile Leu Ser Pro Asn Asp Arg Glu Leu Lys Lys	
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Gly Ala Ile Gly Thr Pro Met Pro Tyr Val Gln Val Lys Val Ile Asp	
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Ile Asn Thr Gly Lys Ala Leu Gly Pro Arg Glu Lys Gly Glu Ile Cys	
375 380 385	
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act cgt gat gct ctt gac aaa gat ggt tgg ctt cat act ggg gat ctt	1303
Thr Arg Asp Ala Leu Asp Lys Asp Gly Trp Leu His Thr Gly Asp Leu	
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gga tat tac gac gaa gac aga ttt atc tat gta gtt gat cga ttg aaa	1351
Gly Tyr Tyr Asp Glu Asp Arg Phe Ile Tyr Val Val Asp Arg Leu Lys	
425 430 435	
gaa ctt att aaa tat aaa gga tat cag gtt gcg cct gct gaa ctg gaa	1399
Glu Leu Ile Lys Tyr Lys Gly Tyr Gln Val Ala Pro Ala Glu Leu Glu	
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Phe Arg Thr Asn Leu Leu Val Asn Tyr Leu Ser Ala Cys Val Val Leu	
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Glu Pro Gly Lys Thr Met Thr Glu Lys Glu Val Gln Asp Tyr Ile Ala	
490 495 500	
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Glu Leu Val Thr Thr Lys His Leu Arg Gly Gly Val Val Phe Ile	
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Asp Ser Ile Pro Lys Gly Pro Thr Gly Lys Leu Met Arg Asn Glu Leu	
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Arg Ala Ile Phe Ala Arg Glu Gln Ala Lys Ser Lys Leu	
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 35 40 45
 Ser Tyr Ala Gln Ile Phe Glu Thr Ser Cys Arg Leu Ala Val Ser Leu
 50 55 60
 Glu Lys Tyr Gly Leu Asp His Asn Asn Val Val Ala Ile Cys Ser Glu
 65 70 75 80
 Asn Asn Ile His Phe Phe Gly Pro Leu Ile Ala Ala Leu Tyr Gln Gly
 85 90 95
 Ile Pro Met Ala Thr Ser Asn Asp Met Tyr Thr Glu Arg Glu Met Ile
 100 105 110
 Gly His Leu Asn Ile Ser Lys Pro Cys Leu Met Phe Cys Ser Lys Lys
 115 120 125
 Ser Leu Pro Phe Ile Leu Lys Val Gln Lys His Leu Asp Phe Leu Lys
 130 135 140
 Arg Val Ile Val Ile Asp Ser Met Tyr Asp Ile Asn Gly Val Glu Cys
 145 150 155 160
 Val Phe Ser Phe Asp Ser Arg Asn Thr Asp His Ala Phe Asp Pro Val
 165 170 175
 Lys Phe Asn Pro Lys Glu Phe Asp Pro Leu Glu Arg Thr Ala Leu Ile
 180 185 190
 Met Thr Ser Ser Gly Thr Thr Gly Leu Pro Lys Gly Val Val Ile Ser
 195 200 205
 His Arg Ser Ile Thr Ile Arg Phe Val His Ser Ser Asp Pro Ile Tyr
 210 215 220
 Gly Thr Arg Ile Ala Pro Asp Thr Ser Ile Leu Ala Ile Ala Pro Phe
 225 230 235 240
 His His Ala Phe Gly Leu Phe Thr Ala Leu Ala Tyr Phe Pro Val Gly
 245 250 255
 Leu Lys Ile Val Met Val Lys Lys Phe Glu Gly Glu Phe Phe Leu Lys
 260 265 270
 Thr Ile Gln Asn Tyr Lys Ile Ala Ser Ile Val Val Pro Pro Ile
 275 280 285
 Met Val Tyr Leu Ala Lys Ser Pro Leu Val Asp Glu Tyr Asn Cys Ser
 290 295 300
 Ser Leu Thr Glu Ile Ala Ser Gly Gly Ser Pro Leu Gly Arg Asp Ile
 305 310 315 320
 Ala Asp Lys Val Ala Lys Arg Leu Lys Val His Gly Ile Leu Gln Gly
 325 330 335
 Tyr Gly Leu Thr Glu Thr Cys Ser Ala Leu Ile Leu Ser Pro Asn Asp
 340 345 350
 Arg Glu Leu Lys Lys Gly Ala Ile Gly Thr Pro Met Pro Tyr Val Gln
 355 360 365
 Val Lys Val Ile Asp Ile Asn Thr Gly Lys Ala Leu Gly Pro Arg Glu
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